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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/803,895

Applicant(s)

OOSAWA, AKIRA

Examiner

CLAIRE WANG

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/3/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Amendment

1. Applicants' response to the last Office Action, filed on November 3rd, 2008 has been entered and made of record.

Response to Arguments

2. Applicant's arguments filed November 3rd, 2008 have been fully considered but they are not persuasive.

a. In response to applicant's remark that "there is no extraction of inner/outer outline images corresponding to an inner/outer outline region that are in the vicinity of the outline of the candidate regions extracted by the candidate regions extraction means." It is noted that Doi teaches feature extraction (S60 Fig. 10), wherein the image features were determined from the outline or texture analysis for inside and outside regions of the segmented nodule (Paragraph [0064], lines 1-8).

b. In response to applicant's remark that "there is no disclosure that there is a link between the outline of the candidate regions that is extracted by the candidate and an inner/outer image." It is noted that Doi teaches that the features were extracted from the inside and outside regions of the segmented nodule (Paragraph [0064], lines 1-8).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 21 is rejected under the second paragraph of 35 U.S.C. 112 as being indefinite.

Claim 21 recites the limitation "said inner/outline region" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-7 and 9-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Doi et al. (US 2002/0172403 hereinafter "Doi").

As to claim 1, Doi teaches an image judging apparatus (automated computerized scheme for distinction between benign and malignant solitary pulmonary nodules on the chest images; Title), comprising a candidate region extracting means for extracting candidate regions for predetermined patterns from medical image data (obtaining digital image with nodule location identified; S10 Fig. 10); an inner/outer outline image extracting means for extracting inner/outer outline images, which are in the vicinity of the outline of the candidate regions extracted by the candidate region extracting means (Figs. 5a-5f shows generated inside and outside regions of the segmented nodules for malignant and benign nodules; Paragraph [0044]); and a pattern judging means for judging the type of pattern within the candidate regions, by employing characteristic amounts of the inner/outer outline image extracted by the inner/outer outline image extracting means (Figs. 6a-6b are graphs illustrating gray-level histograms for inside and outside regions of the segmented nodule on the background trend and density corrected image; [0045]).

As to claim 2, Doi teaches wherein the type of pattern is one of a normal pattern, an abnormal pattern, a benign abnormal pattern, and a malignant abnormal pattern (applying extracted features to at least one classifier; S70 Fig. 10).

As to claim 3, Doi teaches wherein the type of pattern is a type of pattern is classified according to a sign (malignant nodules generally have a lower peak and wider width in the histogram; [0066]).

As to claim 4, Doi teaches a density pattern extracting means, for extracting density patterns, which are present within unit pixel groups that constitute the inner/outer outline images, extracted by the inner/outer outline image extracting means; a presence frequency calculating means, for judging which of the density patterns the unit pixel groups of the inner/outer outline images are similar to, and calculating presence frequencies by counting the presence of the similar density patterns within the inner/outer outline image (Figs. 6a-6b are graphs illustrating gray-level histograms for inside and outside regions of the segmented nodule on the background trend and density corrected image; [0045]); and a classifying means, for classifying the inner/outer outline images according to the type of pattern, based on the presence frequencies of the density patterns; wherein the pattern judging means judges to which classification the candidate region belongs, from among the classifications of the inner/outer outline images, which were classified according to the type of pattern by the classifying means, by employing the presence frequencies of the density patterns therein, derived by the presence frequency calculating means, as characteristic amounts (malignant nodules generally have a lower peak and wider width in the histogram; [0066]).

As to claim 5, Doi teaches wherein the inner/outer outline image extracting means divides the inner/outer outline image into two or more regions comprising an outline edge, an outline interior and an outline exterior (Fig. 5a is an example of an image with inside and outside regions, it is clearly shown that the image is divided into at least 3 regions which include the are outside of the outer outline, the are between the outer outline and inner outline and the area enclosed by the inner outline); and the pattern judging means judges the type of pattern based on the characteristic amount of at least one of the regions (malignant nodules generally have a lower peak and wider width in the histogram; [0066]).

As to claim 6, it is the same as claim 4. Please see above for detail analysis.

As to claim 10, Doi teaches wherein the inner/outer outline region includes inward vicinity and outward vicinity of the outline of the candidate regions (Fig. 5a is an example of an image with inside and outside regions, it is clearly shown that the image is divided into at least 3 regions which include the are outside of the outer outline, the are between the outer outline and inner outline and the area enclosed by the inner outline).

As to claim 11, Doi teaches wherein the inner/outer outline region is within a range from edge of the outline of the candidate regions (Fig. 5a is an example of an image with inside and outside regions, it is clearly shown that the image is divided into at least 3 regions which include the are outside of the outer outline, the are between the outer outline and inner outline and the area enclosed by the inner outline).

As to claim 16, Doi teaches wherein the inner/outer outline images are divided into outline edge regions, outline interior regions, and outline exterior regions (Fig. 5a is an example of an image with inside and outside regions, it is clearly shown that the image is divided into at least 3 regions which include the are outside of the outer outline, the are between the outer outline and inner outline and the area enclosed by the inner outline).

As to claims 7, 12-13 and 17 they are the method claim of claim 1, thus it is analyzed in the same manner as claims 1, 10-11 and 16. Please see claims 1, 10-11 and 16 for detail analysis.

As to claims 9, 14-15 and 18 they are the computer-readable medium claim of claims 1, 10-11 and 16. Therefore claims 9, 14-15 and 18 are analyzed in the same way as claims 1, 10-11 and 16. Please see above for detail analysis.

As to claim 19, Doi teaches wherein the type of patten is only an abnormal pattern (Figs. 5a-5f shows generated inside and outside regions of the segmented nodules for malignant and benign nodules; Paragraph [0044]).

As to claim 20, Doi teaches wherein an abnormal pattern is characterized that it represents symptoms of at least one of tumors, tumorous boils and cancer (lung cancer nodule detection; Col. 12, lines 15-16).

As to claim 21, Doi teaches wherein edges of said inner/outer outline region are within a predetermined distance from the edge of the outline of the candidate region (distance between adjacent contour lines is less than 1.05mm; [0061] lines 4-7).

As to claim 22, Doi teaches wherein the outline edge region is a region which straddles the outline of the candidate regions, outline interior region is a region between the inner edge of the inner/outer region and the outline of the candidate regions, and the outline exterior region is a region between the outer edge of the inner/outer region and the outline of the candidate regions (Figs. 5A-5F).

As to claim 23, Doi teaches wherein the type of pattern within the candidate regions is classified by determining density patterns within each of the small regions that constitute the inner and outer outline images, and obtaining the frequencies at which the density patterns appear within all the small regions of the inner and outer outline images (density calculation; [0064], lines 10-12).

As to claim 24, it is the method claim of claim 23. Therefore, it is analyzed in the same way as claim 23. Please see above for detail analysis.

As to claim 25, it is the computer readable medium claim of claim 23. Therefore, it is analyzed in the same way as claim 23. Please see above for detail analysis.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE WANG whose telephone number is (571)270-1051. The examiner can normally be reached on M-F 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/
Supervisory Patent Examiner, Art
Unit 2624

Claire Wang
01/20/2009